

REMARKS

Claims 11-13, 15-18, and 20 are rejected under 35 USC §102(e) as being anticipated by Sano et al., U.S. 6,664,565.

Applicants respectfully traverse the rejection.

Independent claims 11 and 16 have now been amended to recite an annealed n-type ZnO layer directly positioned on said substrate. An annealed p-type ZnO layer is directly positioned on said n-type ZnO layer. The annealed p-type ZnO comprises an acceptor-doped material under reducing conditions, said annealed n-type ZnO layer and said annealed p-type ZnO layer are annealed at intermediate temperatures under oxidizing conditions between approximately 200 °C and 700 °C to activate p-type conductivity.

In contrast, Sano et al. '565 describes growing a low temperature growth ZnO layer on a sapphire substrate at a temperature lower than a single crystal ZnO growth temperature. Sano et al. '565 illustrates a LED having a p-n junction made of p-type semiconductor ZnO doped with N impurities and n-type semiconductor ZnO doped with Ga impurities, and in particular an N-doped p-type high temperature growth ZnO single crystal layer 315 formed on ZnO single crystal layer 311, which is n-type, and having a thickness of 100 nm. Sano et al. '565 does not describe an annealed p-type ZnO comprising an acceptor-doped material under reducing conditions. One of ordinary skill would not consider an N-doped p-type high temperature growth ZnO single crystal layer to comprise acceptor-doped materials under reducing conditions. Secondly, the n-type ZnO single crystal layer 311 is formed on a buffer layer. Also, Sano et al. '565 does not teach or suggest their ZnO layers being annealed at intermediate temperatures under oxidizing conditions between approximately 200 °C and 700 °C to activate p-

type conductivity . Therefore, Sano et al. '565 does not anticipate independent claims 11 and 16, respectively.

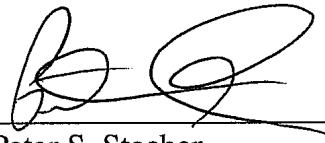
As to claims 12-13, 15, 17-18 and 20, they are dependent on claims 11 and 16, respectively. Therefore, claims 12-13, 15, 17-18 and 20 are also allowable for the same reasons argued with respect to claims 11 and 16.

In view of the above amendments and for all the reasons set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejection made under 35 U.S.C. §102.

Accordingly, an early indication of allowability is earnestly solicited.

If the Examiner has any questions regarding matters pending in this application, please feel free to contact the undersigned below.

Respectfully submitted,



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